IMAGE PLANE ON SENSOR CHIP, ARRAY

OBJECT PLANE

PATTERNED SURFACE

SENSOR SECTION

HDNS-2000

IMAGING LENS

DIGITAL SIGNAL PROCESSOR

LED INCOHERENT ILLUMINATION

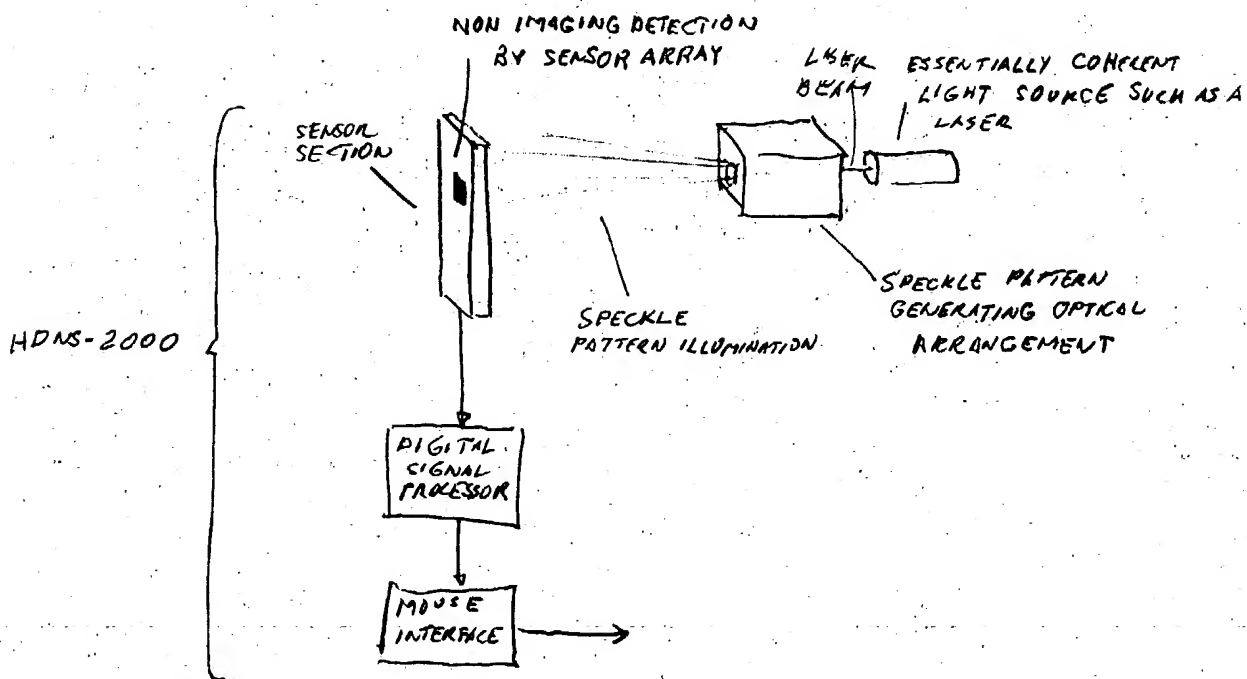MOUSE INTERFACE → TO PC MOUSE PORT

FIG1   PRIOR ART   HDNS-2000   PRINCIPLE OF OPERATION

NON IMAGING DETECTION BY SENSOR ARRAY

LASER BEAM   ESSENTIALLY COHERENT LIGHT SOURCE SUCH AS A LASER

SENSOR SECTION

HDNS-2000

SPECKLE PATTERN ILLUMINATION

SPECKLE PATTERN GENERATING OPTICAL ARRANGEMENT

DIGITAL SIGNAL PROCESSOR

MOUSE INTERFACE →

FIG. 2   CURRENT ART - SPECKLE PATTERN CONTROL OF MOUSE POSITION

PC

CURSOR

HDNS-2000 SENSOR
WITH NO LENS AND WIDE APERTURE
CONNECTED TO
MOUSE OR USB PORT

SPECKLE PATTERN

WIRELESS RECEIVER

MIC IN

HEADSET

SPECKLE PATTERN GENERATOR WITH LASER

MICROPHONE WITH WIRELESS TRANSMITTER
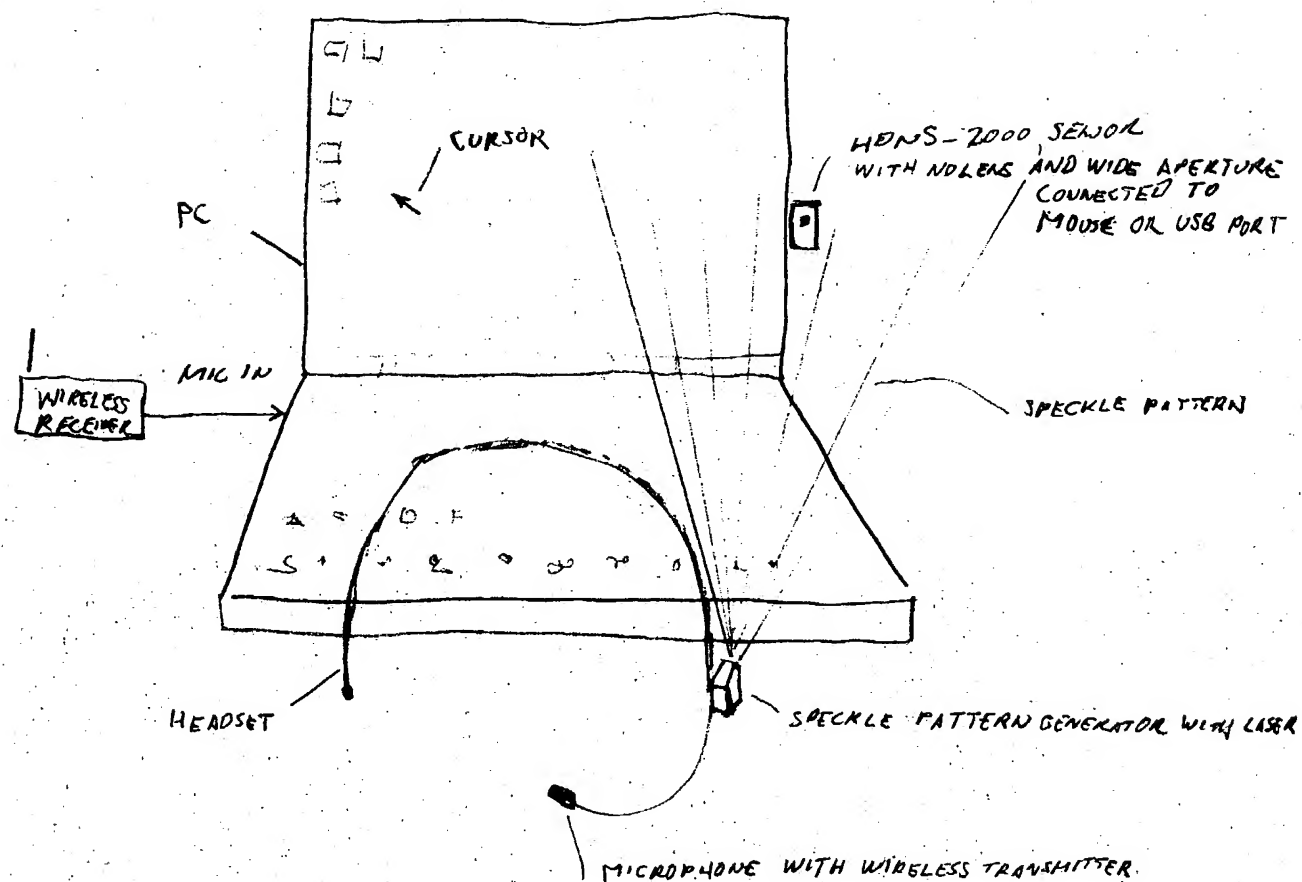
FIG 3   NOVEL CONCEPT FOR HEAD TRACKING USING

(A)   LASER   FIBER OPTIC BUNDLE
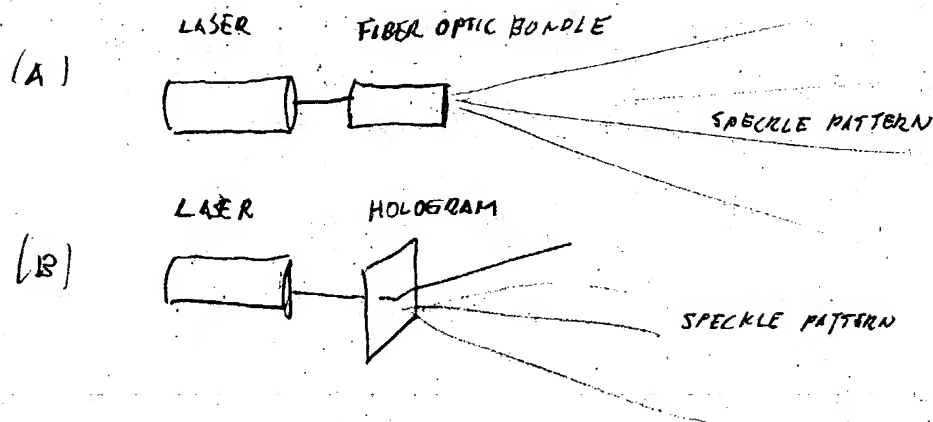
SPECKLE PATTERN

(B)   LASER   HOLOGRAM

SPECKLE PATTERN

FIG 4.   METHODS OF PRODUCING THE SPECKLE PATTERNS

FINGER TIP AT LASER BEAM FOCUS

GLASS PLATE

LENS

SPECKLE PATTERN

LASER

HDNS-2000 SENSOR
WITH NO LENS OR APERTURES

HDNS-2000
CHIP

DIGITAL SIGNAL
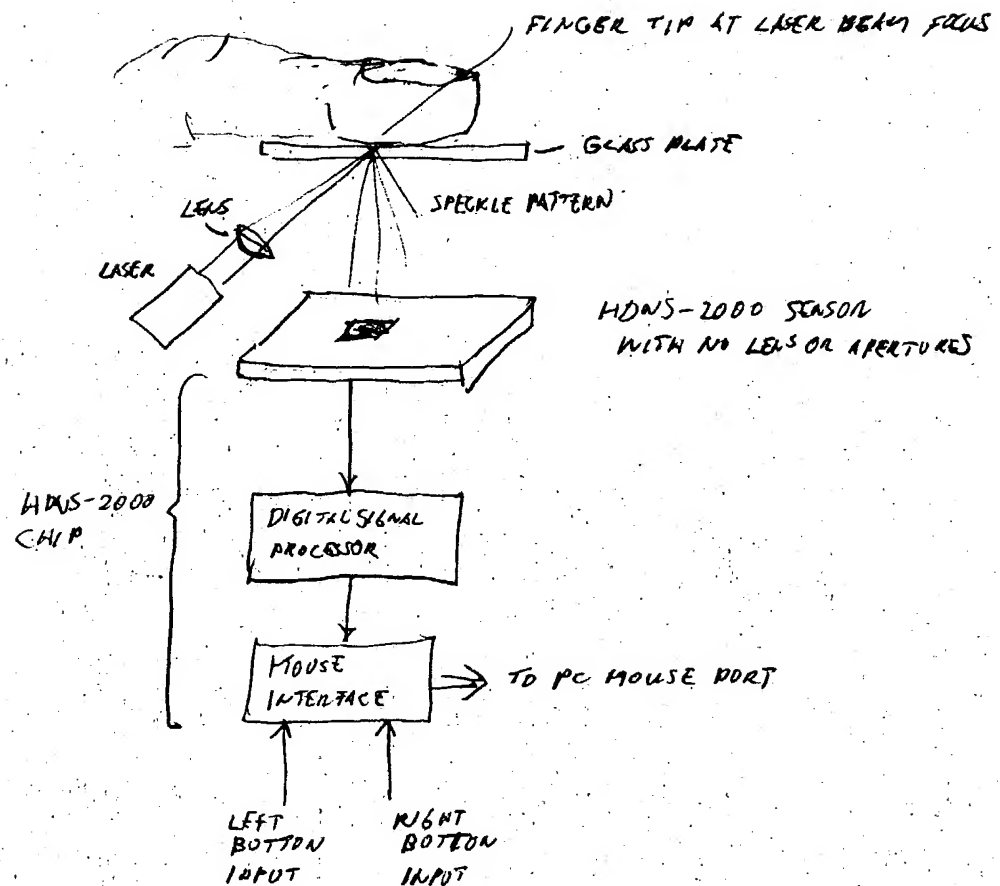PROCESSOR

MOUSE
INTERFACE

TO PC MOUSE PORT

LEFT
BUTTON
INPUT

RIGHT
BUTTON
INPUT

FIG 5   FINGER TIP CONTROLLED MOUSE